# GEOGRAPHIC NEWS BULLETIN

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

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General Headquarters, Washington, D. C.

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A GLIMPSE OF THE SAND BEACH IN WINTER

One of the most conspicuous places to illustrate the effects of weather phenomena—including hurricanes—is on the sea shore. (See Bulletin No. 3.)

## HOW TO OBTAIN THE BULLETIN

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## Sao Paulo: City of Coffee and Snakes

SAO PAULO, BRAZIL, scene of recent rebel uprisings, is the source of the morning aroma from millions of steaming coffee cups all over the world.

Sao Paulo, the city, is the prosperous and beautiful capital of the richest of Brazil's twenty states. The city has half a million people. The State of Sao Paulo is larger than all New England and Pennsylvania combined. It comprises only one-thirty-second part of Brazil's vast area but contains one-eighth of the country's population.

### An Enormous Coffee Bill

To the visitor it seems as if the state had two major products, coffee and—snakes! Its aggregate acreage of coffee trees exceeds the combined areas of Delaware and Rhode Island. There are more than seven coffee trees in the state for every man, woman and child in the United States. At thirty cents a pound the world pays Sao Paulo about $340,000,000 annually for her 1,135,000,000 pounds of coffee produced. As a specialized wholesale grocery her coffee business is only to be compared with Cuba's sugar crop.

Geography, religion and romance are strangely blended in Sao Paulo's coffee. Solomon, for all his wisdom, overlooked a potential source of great wealth, for coffee is generally believed to have originated in Abyssinia, where Solomon's descendants reign to this day. It was not introduced into Brazil until 1723.

A Portuguese sailor was the Captain John Smith of Sao Paulo. He married the South American Pocahontas, daughter of the chieftain Tibirica. That was about 1500. Then came Jesuit missionaries, who are accredited founders of the state, and when they celebrated their first mass on the anniversary of the conversion of St. Paul they named the country for that apostle.

### Corn and Potato Move North

Curiously enough, coffee rules in Brazil, while two indigenous South American crops, corn and the "Irish" potato, are mainstays in North America.

Sao Paulo, the city, is purposefully modern, so much so that some of the social and engineering projects were put into effect there while they were still "paper programs" in North America.

For years now when a new schoolhouse is built in Sao Paulo the school physicians have passed upon the lighting, the kinds of seats to be used, and other hygienic details. Indeed, they must even approve the type and its spacing in textbooks before they are adopted!

An unusual sight of the city is the snake farm. The snake houses, looking like bee hives, cover a large tract. The snakes are the sources of serum used to treat sufferers from the bites of rattlesnakes, the deadly jararacas, and other venomous reptiles.

### Famous "Coffee Railroad"

The railroad from Sao Paulo to Santos, the world's foremost coffee port, is famous among engineers the world over. There is a drop of 2,600 feet in seven miles over one section. Steel cables, stationary engines and especially equipped locomotives are required for the 35-mile run between the two cities. There are



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**WHEN WINTER CRYSTALLIZES NIAGARA'S MISTS**

**While Viscount Bryce deplored the diversion of some of the waters of Niagara to utilitarian uses, the mighty cataract is still the pride of our North American scenery east of the Rockies. When the waters are frozen and huge hillocks of ice cover rocks and river, it is even more impressive than in summer. (See Bulletin No. 2.)**

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## Niagara: An Hour Glass of Geology

WHEN the fall of a huge piece of rock recently threatened to turn the honeymooners' Horseshoe Falls of Great Niagara into a mere spillway, the peril to the Falls' beauty brought forth the proposal to hire engineers to patch up North America's outstanding natural wonder.

By dropping a keystone out of its Horseshoe arch, Niagara was merely performing its duty to the ages.

For 30,000 years the Falls has been the geologic hour glass for much of North America. By reading the record of the rocks that go through the neck of the gorge, as grains of sand slip through the hour glass, scientists stopwatch the glacier sheets, which were the first plows to furrow the fertile mid-west. In the sermons of the cataract's stones lie the chronology of Lake Algonquin, the predecessor of Lakes Superior, Michigan, and Huron, and of Lake Iroquois, the sprawling progenitor of Lake Ontario. Their dates are fixed almost as accurately as history books report William the Conqueror's arrival in England in 1066.

Niagara is the North American champion in one of the greatest battles Nature ever umpired. Literally scores of challengers sought her crown. More than once Niagara fell almost lifeless on her water-worn rocks. But finally the seekers for her crown gave up; the last not many more centuries ago than the days of Tutankhamen.

Niagara is said to take its name from the Indian title nee-agg-arah, which appropriately means "across the neck." The Niagara River cuts across the neck of land separating Lake Erie and Lake Ontario. Just east of Buffalo the river collects the entire natural discharge of the four upper Great Lakes, rushes it through a narrowing river for 16 miles, pushes it over a sheer drop of 212 feet, churns it seven miles through a canyon, and then carries it gently by seven miles of lowland to Lake Ontario.

### The Birth of Niagara

Our Niagara was born when the glaciers melted back, exposing the ridge the water now tumbles down. Like the glaciers of the Rockies, these enormous sheets of ice moving down from Labrador poured out streams of water. These streams collected ages ago at the foot of the huge ice lobes in depressions extending into Ohio, Indiana and Illinois. Accumulated water sometimes rose hundreds of feet higher than the present level of the Great Lakes and poured out into the Mississippi over the present site of Chicago and through outlets in Ohio and Indiana.

Finally, as the ice melted northward, prehistoric Lake Tonawanda formed on the edge of the plateau over which Niagara pours. There were then five outlets from this lake—at Holley, Medina, Gasport, Lockport and Lewiston. The spillway at Lewiston, Niagara, won out. Lockport gorge now contains a flight of steps for the New York barge canal.

### Early Niagaras Numerous

About the time Niagara was beginning to triumph, the melting glacier moved back to Lake Simcoe, Ontario. The fickle waters of the upper lakes lost little time in finding the Trent Valley, a ragged series of lakes and rivers leading into Lake



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thirteen tunnels, but the trains emerge from each to disclose some surprising new panorama of wooded mountain, valley of banana or coffee trees, torrential stream, or gorge of dizzy depth.

The road is said to be one of the best paying in the world. Since the dividends are limited by law its earnings have gone into sumptuous stations, fine rolling stock and perfected equipment until one visitor remarked that all remaining to be done was the gilding of the tops of the telegraph poles.

### Several Tiers of Climate

The steep railroad climb from Santos to Sao Paulo gives a hint to the peculiar geography of the state. For nearly 400 miles along its coast is a low belt, narrow in the north and widening to about 80 miles in the south. Here the weather is hot and moist and the crops are bananas, coconuts, vanilla beans and cacao. This lowland is marked by a line of hills back of which is an undulating plateau, cooler and drier, where the coffee finds ideal growing conditions.

Sao Paulo is notable for its varied architecture, ranging from chalet types, Moorish palaces and buildings of the French Renaissance period to modern office structures. Its outlying streets are as plenteously planted with trees and as well interspersed with flower-planted parks as Washington, D. C.

The port of Santos is given over principally to shipping but lacks the squalor of many older ports. It has a beautiful beach, where the sand is packed so hard that automobiles may drive to the water's edge.

The city has a remarkable theater, with a telescopic roof. By means of an electric mechanism this roof may be removed in ten minutes and the building converted into an open air auditorium. The orchestra chairs are removable so that shortly after the curtain falls a ballroom is available for dancing.

**Bulletin No. 1, October 27, 1924.**

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**THE INDIANA SAND-DUNES AND LAKE MICHIGAN SHORE**

**One chapter in the story of the geological making of America. (See Bulletin No. 2.)**

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## Why Hurricanes Strike the United States

SCIENCE has learned so much about the mysterious ways of a hurricane over sea and land that the Atlantic coast was fully warned against the storm which lashed it from Florida to New York the latter part of August.

The so-called West Indian hurricanes that cripple a Gulf of Mexico city or an Atlantic coast port ever so often are probably as ancient in their origin as the Atlantic Ocean and the North American Continent. They are the creatures of atmospheric temperature and pressure, and variations in these in turn are caused by the sun beating down on the expanses of Atlantic water and the land mass of our continent. The first such storm on record devasted parts of Cuba in 1494.

Annually, between July and October, about ten hurricanes are born somewhere east of the Caribbean Sea, usually to sweep westward, then northward, and finally back northeastward, their paths forming pretty accurate parabolic curves.

The primary factor in the births and careers of these storms is believed to be an area of high atmospheric pressure or "high," that exists practically permanently over the middle Atlantic. In other words, a great blanket of heavy, sluggish air lies continually over this area. Along its southern edge in the Tropics little swirling disturbances occur which are the seeds of possible hurricanes. But there is a certain infant mortality among these stormlets, especially in winter and spring. Then the Atlantic "high" extends in a broad band on into the North American continent, forming in effect a fence of heavy air which the storms can not pass. Confined to the Tropics they are dissipated without causing the United States any concern.

### Storms Must Dodge "Highs"

But when summer heat has warmed up the land the "high" withdraws to its ocean home, jutting out like an air peninsula toward America. The atmosphere over the land becomes an arena for shifting "highs" and "lows."

It is as though an atmospheric football game were in progress. The newly born storms of the tropical Atlantic regions seek, because of the general drift of the atmosphere, to move northward. The "highs," whether stationary or in motion, furnish the interference which they must dodge. The weakest place in the defense is between the permanent mid-Atlantic "high" and the American coast. Most tropical hurricanes, therefore, move east to avoid the mid-ocean barrier and then dash northward well east of the coast. Once around the end of the "high" they swing northeastward and continue on even into Europe.

Some of the storms do not have such plain sailing. If the Atlantic "high" extends farther westward than usual the disturbances must swing over the land to round the end. It is upon such rather infrequent occasions that the Atlantic coast suffers as it did in August.

### Sometimes Storms Are Herded Into Gulf

By a still farther westward extension of the high pressure area the storms are prevented from moving north and sweep into the Gulf of Mexico. Such



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Ontario. Trent Valley gorges tell of many early Niagaras. At this time only 15 per cent of the present flow went over Niagara, forming the narrow lower gorge. Nature came to the rescue, tipping a great block of land, ever so slightly, but enough to shut off the Trent faucet and make even more water go over Niagara that the spectator sees to-day. But the Chicago outlet, predecessor of the drainage canal now figuring in a case before the United States Supreme Court, again cut down the flow.

Once again Niagara was flouted when the outlet shifted to North Bay, Ontario, sending the waters down the Ottawa over the portage which Champlain was to take to discover Lake Huron. The upper narrow gorge was then carved but again the huge rock saucer, which has the Great Lakes puddles in the bottom, tipped, leaving Niagara triumphant.

Niagara started to spill over the bank at Lewiston about 30,000 years ago. In 300 centuries it has shoveled its way seven miles. At its present rate of excavation, more than four feet annually, Niagara will dig back the remaining 16 miles to Lake Erie about the year A. D. 21,924. Before this time, however, man may take a hand, since the peril to the famous Horseshoe Falls, by the recent erosion, has brought forth the suggestion of reinforcing the lip of the Falls.

**Bulletin No. 2, October 27 1924.**

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## Form for Renewal of Bulletin Requests

Many requests for the Geographic News Bulletin were made for the year ending with this issue. It will be a great help in handling the large mailing list of the Bulletins if you order your next season's supply now and thus avoid missing any issues at the opening of the school sessions in the fall. The attached form may be used:

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Washington, D. C.

Kindly send ..... copies of the Geographic News Bulletin for the school year beginning with the issue of ....., for classroom use, to

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Address for sending Bulletins.....

City ..... State.....

I am a teacher in..... school .....grade

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# GEOGRAPHIC NEWS BULLETIN

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## How Geography Lured Joseph Conrad

WHAT geography, exploration and the sea meant to him, the late Joseph Conrad told recently in some personal memoirs—among his last published writings—in the *National Geographic Magazine*.

"Of all the sciences," he wrote, "geography finds its origin in action, and, what is more in adventurous action, of the kind that appeals to sedentary people, who like to dream of arduous adventure in the manner of prisoners dreaming behind their bars of all the hardships and hazards of liberty, dear to the heart of man.

### Man's Unappeasable Curiosity

"Descriptive geography, like any other kind of science, has been built on the experience of certain phenomena and on experiments prompted by that unappeasable curiosity of men which their intelligence has elevated into a quite respectable passion for acquiring knowledge. Like other sciences, it has fought its way to truth through a long series of errors. It has suffered from the love of the marvelous, from our credulity, from rash and unwarrantable assumptions, from the play of unbridled fancy."

Speaking of a book detailing the tragic fate of Sir John Franklin, lost in the Arctic in the early part of the nineteenth century, Conrad said: "The great spirit of the realities of the story sent me off on the romantic explorations of my inner self; to the discovery of the taste for poring over land and sea maps; revealed to me the existence of a latent devotion to geography which interfered with my devotion (such as it was) to my other school work.

### Professors Had Dry Ideas of Geography

"Unfortunately, the marks awarded for that subject were almost as few as the hours apportioned to it in the school curriculum by persons of no romantic sense for the real, ignorant of the great possibilities of active life; with no desire for struggle, no notion of the wide spaces of the world—mere bored professors, in fact, who were not only middle-aged, but looked to me as if they had never been young.

"And their geography was very much like themselves, a bloodless thing, with a dry skin covering a repulsive armature of uninteresting bones.

"The geography which I had discovered for myself was the geography of open spaces and wide horizons, built up on men's devoted work in the open air, the geography still militant, but already conscious of its approaching end with the death of the last great explorer. The antagonism was radical.

### Preferred Map-Gazing to Star-Gazing

"Thus it happened that I got no marks at all for my first and only paper on Arctic geography, which I wrote at the age of thirteen. I still think that for my tender years it was an erudite performance.

"I have no doubt that star-gazing is a fine occupation, for it leads you within the borders of the unattainable. But map-grazing, to which I became addicted so early, brings the problems of the great spaces of the earth into stimulating and directive contact with sane curiosity and gives an honest precision to one's imaginative faculty.



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conditions brought about the terribly destructive Galveston hurricane in September, 1900, and another which cost many lives at Corpus Christi in September, 1919. The Galveston storm turned northward, crossing Texas and Oklahoma, and finally passed to the Atlantic down the St. Lawrence Valley. The Corpus Christi hurricane belonged to the rare type with an approximately straight path. A chain of "highs" formed an impassable barrier to the north and the storm moved on into Mexico where it was finally dissipated among the mountains.

Hurricanes are not winds that drive straight ahead. They are swirls of the cyclonic type. These swirling storm centers move relatively slowly across sea and land, sometimes at no greater speed than eight or ten miles an hour. But they suck air toward them from all sides at terrific speeds, up to 100 or more miles an hour.

Now with the development of radio, ship reports make it possible to keep still closer track of these potentially destructive storms.

**Bulletin No. 3, October 27, 1924.**

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**ROASTING COFFEE**

**This primitive scene in Corsica is in marked contrast to the large scale production of coffee in Brazil. (See Bulletin No. 1.) The beverage prepared from the Corsican berries is black, strong and bitter. The berries are always bought green and roasted over a fire of maquis twigs or charcoal in an iron roaster which is a part of the kitchen equipment.**

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## Asir: The Least Known of the Allies

WHEN France elects a new President or England reorganizes her cabinet the news is flashed around the world; Asir's dethronement of an Emir passes practically unnoticed.

Yet Asir is a country of a million people, it was associated with the Allies in the war, and it was playing its part in the ancient world when our European ancestors were dressing in skins and living in caves.

### One Sure Boundary

Where is Asir? The one certain statement on that point is that its western boundary is the Red Sea. It lies between the southern border of Hedjaz—wherever that border is—and the northern frontier of Yemen—wherever that is. Even more hazy is its eastern delimitation from Nedj.

Asir's vague boundaries comprise one of the least nomadic peoples of the Arabian peninsulas. Its mountains make it as independent as little Montenegro once was; its fertile valleys offer every inducement for the roving Arab to settle down.

### Nomads are Called "Hairy Heretics"

There are nomads in Asir, however, notably a tribe who, theologically, are fundamentalist Mohammedans and, from their appearance, have been called the "hairy heretics." They declined to recognize any caliphs after the death of Ali, the Prophet's son-in-law. They let their heavy hair grow in huge, bushy mops, suggesting the fluffy American girls' "bob," because it protects them from the blistering sun. This style of headdress is not peculiar to Asir. It prevails among the Arabian desert nomads.

Yemen, to the south of Asir, is known because of Mocha, its one-time coffee center. Hedjaz, to the north, is widely advertised, if not known, because of its holy city, Mecca. No European had visited some of Asir's towns until the little district made common cause with the Allies in the hope of throwing off the Turkish yoke. And when the Turkish stronghold surrendered it did so sight unseen!

### Country's Capital Is City of Huts

Only recently an official in India visited Asir's capital, Sabiyah, and gave the outside world the first description of this curious seat of government—a city of huts. These round huts are by no means squalid; they are circular, bee-hive structures, made of clay laid upon a palm-leaf base. A recent Emir decided to build a more distinctive executive mansion, so he chose mud brick and had erected a three-story palace. A few wealthy merchants copied this innovation.

The coast of Asir is a lowland zone twenty or thirty miles wide, and back of this strip lie the mountains and valleys which are virtually unknown.

Bulletin No. 5, October 27, 1924.

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"And the honest maps of the nineteenth century nourished in me a passionate interest in the truth of geographical facts and a desire for precise knowledge which was extended later to other subjects.

"For a change had come over the spirit of cartographers. From the middle of the eighteenth century on, the business of map-making had been growing into an honest occupation, registering the hard-won knowledge, but also, in a scientific spirit, recording the geographical ignorance of its time.

### Fascinated by Maps' Blank Spaces

"And it was Africa, the continent out of which the Romans used to say some new thing was always coming, that got cleared of the dull imaginary wonders of the Dark Ages, which were replaced by exciting spaces of white paper. Regions unknown! My imagination could depict to itself there worthy, adventurous, and devoted men nibbling at the edges, attacking from north and south and east and west, conquering a bit of truth here and a bit of truth there, and sometimes swallowed up by the mystery their hearts were so persistently set on unveiling.

"I stand here confessed as a contemporary of the Great Lakes of Africa. Yes, I could have heard of their discovery in my cradle, and it was only right that, grown to a boy's estate, I should have in the later sixties done my first bit of map-drawing and paid my first homage to the prestige of their first explorers. It consisted in entering laboriously in pencil the outline of Tanganyika on my beloved old atlas, which, having been published in 1852, knew nothing, of course, of the Great Lakes. The heart of its Africa was white and big.

"Surely it could have been nothing but a romantic impulse which prompted the idea of bringing it up to date with all the accuracy of which I was capable. Thus I could imagine myself stepping in the very footprints of geographical discovery.

### Lonely on Land But Never at Sea

"Not the least interesting part in the study of geographical discovery lies in the insight it gives one into the characters of that special kind of men who devoted the best part of their lives to the exploration of land and sea.

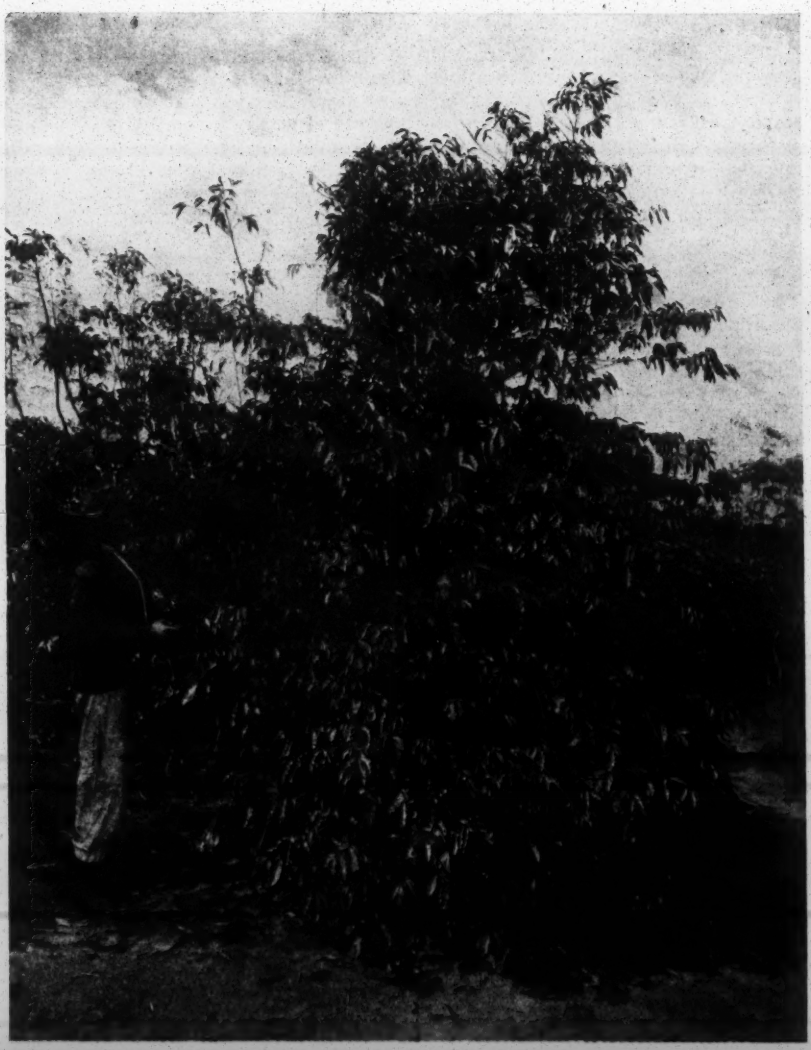
"In the world of mentality and imagination which I was entering, it was they, and not the characters of famous fiction, who were my first friends. Of some of them I had soon formed for myself an image indissolubly connected with certain parts of the world.

"I have smoked a pipe of peace at midnight in the very heart of the African Continent, and felt very lonely there. But never so at sea. There I never felt lonely, because there I never lacked company—the company of great navigators, the first grown-up friends of my early boyhood. The unchangeable sea preserves for one the sense of its past, the memory of things accomplished by wisdom and daring among its restless waves.

### Explorers Bear Sacred Fire

"It was those things that commanded my profoundest loyalty, and perhaps it is by the professional favor of the great navigators, ever present to my memory, that, neither explorer nor scientific navigator, I have been permitted to sail through the very heart of the old Pacific mystery; a region which even in my time remained very imperfectly charted and still remote from the knowledge of men.

"Thus the sea has been for me a hallowed ground, thanks to those books of travel and discovery which had peopled it for me with unforgettable shades of the masters in the calling which in a humble way was to be mine, too—men great in their endeavor and in hard-won successes of militant geography; men who went forth, each according to his lights and with varied motives, laudable or sinful, but each bearing in his breast a spark of the sacred fire."



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**NEAR VIEW OF A COFFEE TREE COVERED WITH BERRIES. (See Bulletin No. 1.)**

## NOTICE TO TEACHERS

**It will facilitate greatly our handling of the Geographic News Bulletin mailing list if school officials and teachers will mail us requests for the Bulletins as early as possible in the school year.**

**Educators who now receive the Bulletins can cooperate with the National Geographic Society if they make this request known to their associates through notices or by announcements.**

**The demand for back copies from those who do not request their bulletins until later in the year always is heavy and usually these cannot be supplied.**